BEFORE
THE PUBLIC SERVICE COMMISSION OF
SOUTH CAROLINA

DOCKET NO. 2023-388-E

In the Matter of:	)	
	)	**DIRECT TESTIMONY OF**
Application of Duke Energy Carolinas,	)	**BRYAN P. WALSH**
LLC For Authority to Adjust and Increase	)	**FOR DUKE ENERGY**
its Electric Rates and Charges	)	**CAROLINAS, LLC**

I. INTRODUCTION AND OVERVIEW

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Bryan P. Walsh and my business address is 525 South Tryon Street, Charlotte, North Carolina.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am Vice President of Central Operational Services and Oversight for Duke Energy Business Services, LLC ("DEBS"). DEBS is a service company subsidiary of Duke Energy Corporation ("Duke Energy") that provides services to Duke Energy and its subsidiaries, including Duke Energy Carolinas, LLC ("DEC" or the "Company") and Duke Energy Progress, LLC ("DEP").

Q. WHAT ARE YOUR DUTIES AS VICE PRESIDENT OF CENTRAL OPERATIONAL SERVICES AND OVERSIGHT?

A. In this role, I am responsible for providing engineering, environmental compliance planning, technical services, and maintenance services for Duke Energy's fleet of fossil, hydroelectric, and solar (collectively, "Fossil/Renewable") facilities.

Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I graduated from The Catholic University of America with a Bachelor of Science in Mechanical Engineering. I also graduated from the Georgia Institute of Technology with a Master of Science in Mechanical Engineering. I am a registered Professional Engineer in the State of North Carolina. My career with Duke Energy began as part of Duke/Fluor Daniel in 1999 as an associate

engineer assisting in the design and commissioning of new combined-cycle power plants. I transferred to Duke Power in 2003 and worked in the Technical Services group for Fossil-Hydro. Since that time, I have held various roles of increasing responsibility in generation engineering, operations areas, and project management, including the role of technical manager at DEC's Marshall Steam Station and station manager at Duke Energy Indiana's Gallagher Station and Markland Hydro Station. I was also the Midwest Regional Manager from 2012 to 2015, with overall responsibility for the Midwest Gas Turbine Fleet and various coal-fired facilities in Indiana and Kentucky. During my time in the Midwest, I also served as Chairman of the Indiana Energy Association's Power Production Committee, which brought together Duke Energy and peer utilities Vectren, NIPSCO, AEP, and IP&L for operational experience exchanges, along with coordination on common industry issues. I was named General Manager for Outages & Projects in the Carolinas in 2015. I became the General Manager of Fossil-Hydro Organizational Effectiveness in 2017. I assumed my current role in 2019.

Q. HAVE YOU TESTIFIED BEFORE THIS COMMISSION IN ANY PRIOR PROCEEDINGS?

A. Yes. I have testified before the Public Service Commission of South Carolina ("Commission") in DEP's and DEC's fuel cases in Docket Nos. 2022-1-E, 2022-3-E, 2021-1-E, 2021-3-E, and 2018-1-E.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to support DEC's request for a base rate adjustment. My testimony will describe the Company's Fossil/Renewable generation assets, provide operational performance results for the period of January 1, 2022, through December 31, 2022 ("Test Period"), update the Commission on capital additions since the 2018 Rate Case, and explain the key drivers impacting operations and maintenance ("O&M") expenses. I also support the Company's request for incremental O&M that has been identified as needed to assure continued reliability of the coal units up until their anticipated retirement.

Q. PLEASE PROVIDE AN OVERVIEW OF YOUR TESTIMONY.

A. Significant changes have occurred since the Company's 2018 Rate Case. As explained in Company witness Michael Callahan's testimony, the Company is now taking on the extraordinary task of planning to orderly retire aging generation and replace it with new generation to meet rapidly increasing customer demand for electricity while maintaining or improving system reliability. DEC's fleet of generating assets includes a diverse mix of fossil and renewable assets located across South Carolina and North Carolina. DEC's fleet functions and is operated as an integrated whole system to increase reliability, efficiently dispatch units, and provide safe, reliable, and cost-effective service for customers. These resources operated reliably during the Test Period and DEC reasonably and prudently operated and maintained the fleet to maximize

unit reliability, minimize fuel costs, and provide safe, reliable, and reasonably priced service to customers.

The challenge of optimizing plant investments for an aging coal fleet is unprecedented in its complexity. The varied timing of planned retirement dates introduces additional complications as to how we reliably serve customers while optimizing investments in the assets. In addition, the dynamics within the fossil fleet, and the Company's strategy for optimizing fleet investments, have changed over time as circumstances have evolved. For example, the addition of dual fuel optionality to Belews Creek and Marshall since the 2018 Rate Case has increased fuel flexibility in DEC's service territory for the benefit of our customers and affected the Company's investment optimization strategy. The Company balances investment in its larger, higher capacity factor units with adequate funding levels for smaller units with lower capacity factors, focusing on overall reliability and cost-optimization for customers. To achieve this balance, we analyze the information we have at a given time and take actions based on that analysis to optimize investment for customers' benefit, particularly for the coal fleet as it nears retirement, based on which units are the most efficient, reliable, and expected to run the most.

As DEC reflected in its previously filed 2023 integrated resource plan in Docket No. 2023-10-E, the Company must continue to invest in its entire Fossil/Renewable fleet to maintain reliable service. While we plan to eventually replace, retire, and/or repurpose our remaining coal plants, it is important that they remain efficient and operational until they go off-line. For this reason, to

allow the remaining coal plants to reliably contribute to resource adequacy, and to maintain natural gas resources that are so critical to this resource mix, the Company has appropriately and prudently incurred costs to maintain its fossil assets in reliable working order to support customers' energy needs.

Q. HOW IS THE REMAINDER OF YOUR TESTIMONY ORGANIZED?

A. The remainder of my testimony is organized as follows:

II. FOSSIL/RENEWABLE FLEET

III. CAPITAL ADDITIONS

IV. O&M EXPENSES

V. PERFORMANCE

VI. CONCLUSION

II. FOSSIL/RENEWABLE FLEET

Q. PLEASE DESCRIBE DEC'S FOSSIL/RENEWABLE GENERATION FLEET.

A. The Company's Fossil/Renewable generation portfolio consists of approximately 14,277 megawatts ("MWs") of generating capacity, made up as follows:

Coal -	6,087 MWs
Hydro -	3,357 MWs
Combustion Turbines ("CT") -	2,633 MWs
Combined Cycle Turbines ("CC") -	2,116 MWs
Solar -	71 MWs
Combined Heat and Power ("CHP") -	13 MWs

The coal-fired assets consist of four generating stations with a total of 10 units. These units are equipped with emissions control equipment, including selective catalytic or selective non-catalytic reduction ("SCR" or "SNCR") equipment for removing nitrogen oxides ("NO_x") and flue gas desulfurization ("FGD" or "scrubber") equipment for removing sulfur dioxide ("SO_2"). In addition, all 10 coal-fired units are equipped with low NO_x burners.

DEC has a total of 31 simple cycle CT units. Twenty-nine of these units, which provide approximately 2,549 MWs of capacity, are located at our Lincoln, Mill Creek, and Rockingham Stations, and are equipped with water injection systems that reduce NO_x and/or have low NO_x burner equipment in use. The remaining two units, located at the W.S. Lee CT facility, have a total capacity of 84 MWs and are equipped with fast-start ability in support of DEC's Oconee Nuclear Station. The Company also has the Clemson CHP facility that provides 13 MWs of capacity.

The Company has 2,116 MWs of CC turbines, comprising the Buck CC, Dan River CC, and W.S. Lee CC facilities. These facilities are equipped with technology for emissions control, including SCRs, low NO_x burners, and carbon monoxide/volatile organic compounds catalysts.

The Company's hydro fleet includes two pumped storage facilities with four units each that provide a total capacity of 2,300 MWs, along with conventional hydro assets consisting of 59 units providing approximately 1,057 MWs of capacity.

The 71 MWs of solar capacity are made up of 17 rooftop solar sites providing 3 MWs of relative summer dependable capacity, the Mocksville solar facility providing 6 MWs of relative summer dependable capacity, the Monroe solar facility providing 22 MWs of relative summer dependable capacity, the Woodleaf solar facility providing 2 MWs of relative summer dependable capacity, the Gaston solar facility providing 10 MWs of relative summer dependable capacity, and the Maiden Creek solar facility providing 28 MWs of relative summer dependable capacity.

Q. WHAT MAJOR CAPACITY CHANGES HAVE OCCURRED WITHIN THE FLEET SINCE THE 2018 RATE CASE?

A. In 2019, the Company sold five hydroelectric generation facilities to Northbrook Carolina Hydro II, LLC and Northbrook Tuxedo, LLC ("Northbrook"). These facilities were the Bryson, Franklin, and Mission Stations in the Nantahala area of North Carolina, the Tuxedo Station in Henderson County, North Carolina, and the Gaston Shoals Station in Cherokee County, South Carolina. The total capacity of these facilities was 18.7 MWs. Due to the significant maintenance costs required by the facilities, and the relatively small output of the facilities compared to the remainder of DEC's portfolio, divesting of the facilities by DEC was more economical than continued ownership and results in net savings for customers over time. The Commission approved the transfer in Order No. 2019-474, which was issued on June 26, 2019 in Docket No. 2018-281-E. Company witness LaWanda Jiggetts discusses the proposed recovery of the losses on the disposition of the facilities that DEC deferred related to this sale.

Regarding new capacity additions, Bad Creek Pumped Storage Station Units 1, 2, and 3, located in Oconee County, South Carolina, were uprated with new equipment, including pump-turbine replacements, generator-motor winding replacements, generator step-up transformer replacements, and generator circuit breaker replacements. Additional equipment, including the massive spherical valves and cooling systems, was refurbished and upgraded to accommodate the uprated units. The uprated units were placed back into service in October 2021, October 2020, and March 2023, respectively. These uprates added an additional 240 MWs to the system, along with additional system storage capacity, which will allow for greater flexibility to accommodate current renewable generation as well as anticipated additional renewable generation planned for the future. Additionally, the Gaston solar facility went into service in December 2020 and provides 17 MWs of capacity, and the Maiden Creek solar facility went into service in January 2021 and provides approximately 46 MWs of capacity. Finally, the Clemson CHP plant, located on the Clemson University campus and owned and operated by DEC, was completed in December 2019, bringing an additional 13 MWs on to the system.

Regarding plant retirements, Allen Unit 3 was retired on March 31, 2021, and Allen Units 2 and 4 were retired on December 31, 2021, removing 677 MWs from the system altogether. In addition, W.S. Lee Steam Station Unit 3 was retired on March 31, 2022, removing 170 MWs from the system.

Q. CAN YOU COMMENT ON HOW THE COMPANY OPERATES ITS FLEET IN ORDER TO PROVIDE RELIABLE, COST-EFFECTIVE SERVICE TO CUSTOMERS?

A. Yes. As previously stated, while the Company's territory is spread across parts of both South Carolina and North Carolina, the system functions and is operated as an integrated whole. This unique system allows resources located in both states to be shared across the system to serve South Carolina and North Carolina customers. The Company's economic unit commitment model supports the short-term resource planning and dispatch of the DEC fleet by economically optimizing total system variable cost over a seven-day forecast period. In addition, the Company and DEP can transfer economic energy between each other to optimize the combined generation fleet to serve the Company's customers in South Carolina at the lowest cost. This approach benefits customers by increasing reliability of the system and the efficiency of system dispatch, and by providing the lowest cost energy for customers.

Q. PLEASE DESCRIBE THE INVESTMENTS MADE AND PROCESSES USED BY THE COMPANY TO MAINTAIN AND IMPROVE THE RELIABILITY OF THE FOSSIL FLEET GENERALLY AND DURING SEVERE WEATHER EVENTS.

A. The Company's operational protocols recognize the importance of rigorous preparation to maximize our plants' reliability during extreme weather events. Duke Energy routinely reviews station performance and risk to ensure reliable performance of its fossil fleet units. Specifically, DEC's routine analysis of fleet

and station reliability informs future maintenance activities and investments. For example, during these reviews, the Company identified opportunities to improve performance by making capital investments, including investments related to boiler tubes, generators, and turbine valves for the DEC fleet. These types of targeted capital investments allow the Company to drive reliable operations of the fossil fleet during severe weather conditions as well as year round for the benefit of our customers, and will improve the Company's response to events like Winter Storm Elliott, by reducing the potential for forced outages of our fossil fuel fleet.

DEC also utilizes operating experience to take lessons learned from severe weather events to improve reliability. After the 2014 polar vortex, the Company reviewed each plant's winterization plans and modified their winterization preventative maintenance, including updated insulation inspections, heat trace testing, and equipment draining. In 2017, based on additional cold weather experience, DEC developed Seasonal Preparation Guidelines to more formally document expectations for the generating stations. Each site has a corresponding winter preparation plan that is consistent with these guidelines. The Company utilized these winter preparation plans in anticipation of Winter Storm Elliott, which helped enable additional units to run reliably during the event. In addition, our Functional Working Team (which includes representatives from each operating region) has a standing agenda item to meet at least one month prior to each winter season to report any outstanding

items or limitations for winter preparation across the fleet. (Similar action is taken in preparation for the summer/hurricane season.)

More recently, the Company has taken additional actions around winter preparation. In August 2022, the Company issued an engineering standard for Combustion Turbine Generator Operations on Liquid Fuel, which specifies testing expectations for dual fuel units on liquid fuel to keep these units available in the event that natural gas is not available. This standard was a factor in enabling the Company to reliably start up numerous units on fuel oil during Winter Storm Elliott. The Company is utilizing lessons learned from 2022-23 winter operation to update these plans and standards as we move through the winter of 2023-24.

Q. YOU MENTIONED WINTER STORM ELLIOTT. PLEASE DESCRIBE HOW THE COMPANY'S FOSSIL UNITS PERFORMED DURING THE STORM.

A. The Company's fossil fleet did not experience any unit or power block trips; the one derate of a unit in operation that DEC experienced, at Dan River Station, was the result of compromised low pressure drum level sensing line heat trace and inadequate insulation on blowdown valves. All generation reductions were restored by December 25, 2023.

Q. WHAT LESSONS LEARNED DID THE COMPANY DRAW FROM THIS EVENT?

A. The Company determined that the common causes of the generation derates experienced during this event across both DEC and DEP included heat trace

anomalies and inadequate insulation. Projects including heat trace repairs, sensing line umbilical replacements, and instrument enclosures have been completed at the highest risk units, including for example those units that had derates or are outdoor fossil units, across DEC and DEP, and additional longer-term projects are planned in each jurisdiction to further harden the fleet.

Q. WHAT STEPS HAS THE COMPANY TAKEN TO PREPARE FOR THE 2023-2024 WINTER SEASON?

A. As noted above, the Company is utilizing lessons learned from 2022-23 winter operation to update these plans and standards as we move through the winter of 2023-24 and has enhanced its winterization activities for the fossil fleet. This includes adding heat trace monitoring systems to provide real-time continuous current measurement with trend and alarm capability and developing heat trace system overview and troubleshooting training for operations and maintenance technicians. It also includes performing insulation audits and assessments and taking actions to repair and improve insulation and improve operational protocols for conducting insulation condition assessments. The Company has installed additional wind breaks and enclosures at the areas of highest risk. DEC has also updated the fleet's season readiness procedures to incorporate site specific lessons learned from Winter Storm Elliott and assigned a seasonal readiness coordinator to each facility. Additionally, grid reliability evaluations have been updated to trigger earlier commencement of readiness measures in advance of extreme weather. Finally, the Company has enhanced its generation maintenance schedule to refine outage season windows so that the planned 2023

fall outage season concluded by the first week of December. All of these actions have been taken to address the Company's highest areas of risk, with longer term projects in the plan to further harden the fleet. Additionally, the Company will continue to apply lessons learned from operating experience to further improve the fleet.

Q. PLEASE DESCRIBE THE CONTINUING IMPORTANCE OF THE FOSSIL FLEET TO THE CUSTOMERS OF SOUTH CAROLINA.

A. The Company's South Carolina customers have benefitted from decades of reliable, cost-effective electricity generated from the fossil fleet. The Company's portfolio includes a diverse mix of units that, along with its nuclear capacity, allows DEC to meet the dynamics of customer load requirements in a logical and cost-effective manner. The coal fleet, in particular, has been a long-time contributor to resource adequacy and an invaluable resource in ensuring fuel and generation adequacy.

Today, the Carolinas primarily rely on a mixture of nuclear, coal, natural gas, pumped storage, traditional hydro, and increasing amounts of solar to provide the energy necessary to meet electricity demands. The diversity of the resource and fuel mix, and availability of coal generation during the transition away from coal, must be strategically managed to ensure the remaining coal fleet can reliably contribute to resource adequacy. As the Company makes plans to eventually retire its remaining coal fired assets, and repurpose or replace those assets with other resources, it is important to keep these remaining units in efficient working order to support the energy needs of our customers.

Therefore, costs for these assets will continue to be incurred as appropriate and prudent to ensure that the same reliable, cost-effective electricity that customers have relied on for decades remains available while the replacement of those units is developed and implemented. Additionally, the combination of generation resources that replaces coal must be able to provide the same level of reliability that the coal units have provided. Because natural gas is critical to this resource mix while energy storage capacity is being developed and deployed, the Company will continue to rely on its natural gas fleet as part of the diverse and dispatchable resource mix that will be needed to ensure the reliability of service to DEC customers both now and in the future.

III. CAPITAL ADDITIONS

Q. PLEASE DESCRIBE THE MAJOR FOSSIL/RENEWABLES CAPITAL INVESTMENTS COMPLETED SINCE THE COMPANY'S LAST RATE CASE PROCEEDING.

A. Since the 2018 Rate Case, DEC has made capital investments in its Fossil/Renewable fleet totaling approximately $2.5 billion on a system basis. This figure reflects actual investments from January 1, 2019 through September 30, 2023, and an estimate of investments from October to December of 2023. Estimates will be updated to actuals in the supplemental testimony of Company witness Jiggetts.

The Company invested approximately $1 billion in capital maintenance projects for the coal fleet. Dual fuel capability was added at both the Belews Creek and Marshall Stations, giving an additional source of reliable,

dispatchable, low-cost power to our customers. Upgraded wastewater treatment systems were installed at Cliffside, Allen, and Marshall Stations due to a change in the U.S. Environmental Protection Agency's rules for Steam Electric Generating Effluent Limitations Guidelines ("ELG") (40 C.F.R. § 423). Other capital maintenance items include but are not limited to miscellaneous valve replacements and repairs, secondary air heater basket replacements, and catalyst replacements.

At the CC/CT stations, DEC has invested approximately $406.3 million in capital maintenance projects, including but not limited to hot gas path inspections, valve repair, and replacement work.

Hydro capital costs during the period totaled approximately $952.1 million. Uprate projects at Bad Creek were completed, increasing the capacities of Units 1 through 3 by 80 MWs each. FERC-required projects totaling approximately $340 million were completed, including an auxiliary spillway at Cedar Cliff, Dearborn dam structural modifications, a stator replacement at Keowee, and seismic improvements at Linville dam. Other projects completed included gate life extensions, hoist maintenance, and access area installations and improvements.

Solar capital investments totaled approximately $127.7 million. These investments included the completion of the Maiden Creek and Gaston solar facilities, which provide 46 MWs and 17 MWs firm summer capacities respectively.

Finally, as a part of the dual fuel projects and the Lincoln Unit 17 construction, capital leases totaling approximately $390.6 million were executed for pipeline leases. The lease amount is not included in the $2.5 billion additions total noted above.

Q. ARE THESE CAPITAL ADDITIONS USED AND USEFUL IN PROVIDING ELECTRIC SERVICE TO DEC'S ELECTRIC CUSTOMERS IN SOUTH CAROLINA?

A. Yes. The capital additions listed above are commercially operational and providing electric service to customers.

Q. ARE THERE ANY OTHER CAPITAL INVESTMENTS UNDERWAY IN THE FOSSIL/RENEWABLE FLEET THAT YOU WOULD LIKE TO DISCUSS?

A. Yes. DEC's 2016 Integrated Resource Plan showed a need for a 468 MW CT in the 2024 time frame. Based on that identified need, DEC requested and received from the North Carolina Utilities Commission a certificate of public convenience and necessity ("CPCN") for a new state-of-the-art CT at the Company's Lincoln County Combustion Turbine Station located in North Carolina ("Lincoln County"). The proposal included Siemens Energy as the Engineering, Procurement and Construction ("EPC") contractor for the project, including supply of the advanced gas turbine unit. The new to market technology (SGT6-9000HL) is Siemens Energy's first 60Hz HL-class turbine and major components (turbine rotor, generator etc.) were manufactured at its Charlotte facility.

As part of the innovative agreement with Siemens Energy, the EPC installed and is conducting testing of the advanced turbine at the station. It is designed to run longer between maintenance cycles and will be the most efficient unit of its type in Duke Energy's fleet (about 34% more efficient than the existing combustion turbines at the Lincoln County site). The unit's fast start and high ramp rate capability will help the Company reliably meet its electric service obligations and support the integration of additional renewable resources DEC is placing on its system. This project also includes the transmission facilities associated with the advanced CT. The project is currently projected to go in service in November 2024.

Q. IN YOUR OPINION, HAVE THE COSTS RELATED TO THE COMPANY'S CAPITAL ADDITIONS BEEN PRUDENTLY INCURRED?

A. Yes. DEC controls costs for capital projects and O&M using a cost management program. The Company controls costs through routine executive oversight of project budget and activity reporting with new projects requiring approval by progressively higher levels of management depending on total project cost. The Company controls ongoing project and O&M costs through strategic planning and procurement, efficient oversight of contractors by a trained and experienced workforce, rigorous monitoring of work quality, thorough critiques to drive process improvement, and industry benchmarking to ensure best practices are being used.

IV. O&M EXPENSES

Q. PLEASE DESCRIBE THE O&M EXPENSES FOR THE FOSSIL/RENEWABLE FLEET.

A. For the fossil units, approximately 83% of DEC's required O&M expenditures are fuel-related for the Test Period. The majority of non-fuel expenditures are for labor costs from Company or contract resources that operate, maintain, and support the Fossil/Renewable facilities. Finally, the Company continues to be challenged by costs driven by inflationary pressures for labor and materials.

Q. HOW DOES THE COMPANY CONTROL AND MITIGATE O&M EXPENSE INCREASES?

A. The Company has many efforts in place for controlling and/or minimizing costs. For example, DEC optimizes outages based on run time, which is affected by fuel market prices, weather cycles, and changes in generation resources. This optimization provides labor and materials savings. The Company also utilizes an extended planned reserve ("EPR") strategy to manage its aging coal fleet. The Company's EPR strategy is intended to minimize overall costs and allow the Company to optimize resources across the generation fleet to benefit customers. The EPR strategy provides a consistent approach for managing low-tier coal generation units, such as Allen 1 and 5, that are committed for dispatch much less frequently due to their higher costs. Additionally, as part of the effort I reference above regarding earlier commencement of readiness measures in advance of extreme weather, the Company has recently refined its EPR program to allow units to be returned online more quickly when they are anticipated to

be needed to maintain system reliability, such as in the case of a severe weather event.

The Company runs its business in a disciplined manner and continuously balances cost management with safety and reliability to generate electric service for our customers. Cost to customers is a key concern and the Company's diverse portfolio allows us to reduce overall fuel expense.

Q. WHY IS THE COMPANY MAKING A PRO FORMA ADJUSTMENT TO O&M FOR RELIABILITY ASSURANCE AS PRESENTED IN WITNESS JIGGETTS' DIRECT TESTIMONY?

A. One of the primary challenges related to our coal plants is determining the most prudent way to make plant investment decisions to maintain continued reliability while navigating uncertain plant retirement timelines. Ensuring continuing reliability of the system as supported by the Company's aging coal facilities will remain paramount as we "replace before retire." In recent years, due to volatility in fuel prices, DEC has needed to cycle its coal units on and off more frequently, thus increasing wear and tear on the units and increasing the units' maintenance costs. Given the need to run these plants intermittently—which is not how they were originally designed to operate—the Company evaluated, based on these changed circumstances, how best to ensure that the coal fleet continues to remain reliable up until these units' anticipated retirement, and determined that certain investments in these aging facilities were needed to support continuing reliability for the rest of their expected remaining life.

Specifically, during 2021-2022, we developed the Reliability Threats Analysis tool, which can conduct a forward forecast of challenges to the coal fleet to help us better prioritize funding and optimize future investments in coal. Based on the results of the Reliability Threat Analysis and other internal evaluation, the Company has identified several categories of O&M investments that are needed to maintain reliability. Additionally, as discussed above, following Winter Storm Elliott, DEC identified additional investments that are needed to help further winterize the fleet for the next several years (beyond the substantial winterization previously implemented that I describe above). These are the projects reflected in pro forma SC-2160, which presents the adjustment, included in witness Jiggetts' testimony, that increases the test period O&M related to planned reliability assurance projects by $2.048 million. These projects represent forward-looking work based upon future reliability risks identified through the Reliability Threats Analysis and additional analysis and experience.

"Reliability Assurance" is the project name selected for the work identified in the pro forma, as the work is focused on seeking to assure continued reliability of the coal units up until their anticipated retirement. This work will increase O&M at the Belews Creek, Cliffside, and Marshall Stations over and above what was in the 2022 Test Period. The adjustment in witness Jiggetts' testimony reflects the average of the identified incremental O&M over a three-year period.

Q. PLEASE PROVIDE MORE DETAIL ON THE WORK INCLUDED IN THE PRO FORMA.

A. The "major component" project category represents work that the Company identified through the Reliability Threats Analysis that is intended to address large items of equipment showing a clear need of attention to maintain reliability of the unit, such as major maintenance and rebuilds of pumps, motors, and large breakers. The "reliability improvements" project category represents typically smaller, less obvious projects that can also impact reliability, especially when combined with other equipment failures. An example is maintenance to address increasing fan vibration that, if not addressed, could cause fan failure. The "repair hold" work will repair and place back in stock major component items that are currently in a repair hold status, that do not have a spare readily available, and that have exacerbated long lead times due to supply chain challenges. The "winterization O&M" work was identified by DEC as needed due to Winter Storm Elliott and includes, for example, additional wind breaks, additional insulation, and updated heat trace systems. Finally, the costs included for "staffing" consist primarily of salary, benefits, and overhead to enable recruiting, hiring, training, and qualification to ensure adequate operations staff remains available to continue to safely operate the plants.

V. PERFORMANCE

Q. PLEASE DISCUSS THE OPERATIONAL RESULTS FOR THE DEC FOSSIL/RENEWABLE FLEET DURING THE TEST PERIOD.

A. The Company's Fossil/Renewable generating units operated efficiently and reliably during the Test Period. Several key measures are used to evaluate the operational performance depending on the generator type: (1) equivalent availability factor ("EAF"), which refers to the percent of a given time period a facility was available to operate at full power, if needed (EAF is not affected by the manner in which the unit is dispatched or by the system demands; it is impacted, however, by planned and unplanned maintenance (*i.e.*, forced) outage time); (2) net capacity factor ("NCF"), which measures the generation that a facility actually produces against the amount of generation that theoretically could be produced in a given time period, based upon its maximum dependable capacity (NCF *is* affected by the dispatch of the unit to serve customer needs); (3) starting reliability ("SR"), which represents the percentage of successful starts; and (4) equivalent forced outage factor ("EFOF"), which quantifies the number of period hours in a year during which the unit is unavailable because of forced outages and forced deratings.

Based on these metrics, the Company's performance data supports the conclusion that DEC has reasonably and prudently operated and maintained its Fossil/Renewable resources during the Test Period to maximize unit availability, minimize fuel costs, and provide safe and reliable service to its customers.

Q. HOW MUCH GENERATION DID EACH TYPE OF GENERATING FACILITY PROVIDE FOR THE TEST PERIOD?

A. For the Test Period, DEC's system total generation was approximately 98.1 million megawatt-hours ("MWHs"). The Fossil/Renewable fleet provided approximately 38.5 million MWHs, or approximately 39%. The breakdown includes approximately 22% contribution from the coal-fired stations, 16% from gas facilities, and approximately 1% from renewable facilities, primarily hydro.

VI. CONCLUSION

Q. IS THERE ANYTHING YOU WOULD LIKE TO SAY IN CLOSING?

A. Yes. The Company has a proven history of experience-based, safe, reliable, and cost competitive operation of a diverse generation portfolio. The Company has been active and diligent in making the right investments that continue, and build on, DEC's solid history of safely providing reliable, efficient, and cost-effective generation, while reducing environmental impacts and ensuring compliance with state and federal regulations. Our customers reap the benefits of the Company's diverse generation assets through the economic dispatch of our energy across South Carolina and North Carolina, which dispatches lower cost energy first, saving customers money.

As the Company progresses towards retiring and replacing its coal fleet, it is critical to keep these units running in good working order to provide the dependable, low-cost electricity on which our customers depend, and to maintain the efficient and reliable operation of the natural gas fleet. DEC is

positioned to continue as a leader in the industry with a solid base of knowledge and experience. This base rate increase will allow the Company to continue its tradition of operational excellence and focus on safe operations and reliable generation.

Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

A. Yes.